21 July 1960

Dear Don,

We have a problem which may be something with which you can help us. As you know, we intend to support material over pneumatic bars on a cushion of gas. For certain reasons it is necessary to use helium. Our original intention was to utilize pumps and recycle the helium within a closed volume on our stabilized package. However, we have not yet located pumps which are attractive in terms of weight, reliability or delivery.

We are now considering the use of bottled helium which we would have to exhaust without distabilizing the package into the Q-bay and then vent out of the Q-bay and overboard. [redacted] STATINTL advises us that this is allowable. Is it possible that you will be able to either supply us with appropriate bottles or, at least, give us the benefit of your engineering background in this area?

An approximate statement of the problem is as follows: We require approximately 5 cfm total estimated flow into an ambient of 1/3 atmosphere at 120°F with a 3 psi drop through the 25 or so bars. We calculate this requirement to be 236 cubic feet at 8 psia at 120°F. For space reasons we would like to carry this at the highest practical pressure. Our information is that 0.6 cubic feet at 3,000 psia might be achievable. Obviously it would be desirable to include with the bottles appropriate valving to step down high pressure. The valving would probably be actuated by electro-mechanical servos on an on-off basis with the system and would therefore not be a short pulse sort of operation.

Do you think that reliability is such that we can carry just sufficient helium for the mission? or, would it be better to have three supplies, any two of which would be capable of doing the job? This would provide protection against a valve sticking open or closed but perhaps a redundant valve would be a better solution. For space reasons we prefer cylindrical bottles to spherical but we could accommodate spherical if this is necessary.

If you can help us, would you want an unclassified purchase order, or would you prefer funding to be handled in some other manner?

Because of vacation and other meetings, neither Rod, Jules or myself will be around the end of next week. However, I will probably be at the ranch the 28th and 29th so that we could discuss this then if you or one of your people will be there.